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| 10/599,263 | 09/25/2006 | Nalliah Raman | NL040298US1 | 6364 |

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| EXAMINER | |
|---|---|
| BOYD, JONATHAN A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2629 | |

| NOTIFICATION DATE | DELIVERY MODE |
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| 04/13/2011 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/599,263 | RAMAN ET AL. | |
| | Examiner | Art Unit | |
| | JONATHAN BOYD | 2629 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *02 February 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,4-17 and 19-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1,4,10-17 and 19-21* is/are rejected.

7)☐ Claim(s) *5-9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims 15, 17 and 18 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 21 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In regards to the statement, in claim 15 "selecting the **dimmed brightness level** in dependence on (i) a number of occurrences of a gray level corresponding to a brightness level of display pixels above the **dimmed brightness level**" is in an inappropriate recursive format. Where the dimmed brightness level can not be defined unless one can count the number of occurrences of a gray level and where the number of occurrences of a gray level can not be determined without knowing the dimmed brightness level.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

> the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1, 10, 11 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (2002/0130830) in view of Leyvi et al (2006/0071936) (herein "Leyvi") and further in view of Applicant's Admitted Prior Art (AAPA) (See; Page 8 of Remarks filed 02/02/2011)

In regards to claims 1, 15 and 17, Park teaches a display device comprising an adjustable light source (*See; Fig. 1, element 120*); a display panel with display pixels for modulating light originating from the light source (*See; Fig. 1, element 110 and p[0023]–p[0024]*); and processing circuitry coupled to the display panel and the light source (*See; Fig. 1, element 200 and p[0026]-p[0028]*) ,the processing circuitry having an input for receiving an input signal representing gray levels of pixels of an image to be displayed on the display panel (*See; Fig. 1, where inputs RGB connect to data counter 210 and p[0029]*) and comprising: means for selecting a dimmed brightness level of the light source in dependence on the gray levels of the image pixels (*See; Fig. 3, steps x10 and p[0030]-p[0035] where the number of low and high gray levels are counted for the purpose of having an action on the luminance*), the means for selecting being adapted

(i) a number of occurrences of a gray level corresponding to a brightness level of display pixels above the dimmed brightness level, and (*also read on and/or*) (ii) a number of occurrences of a gray level corresponding to a brightness level of display pixels below a predetermined brightness level being a fixed or adjustable level determined in dependence on the dimmed brightness level (*See; p[0030]-p[0035] Park teaches counting a number of occurrences of low gray levels and high gray levels within an image and outputting a luminance control signal to alter the luminance of the backlight dependent on the count. P[0035] states that when the high gray levels are greater than the low gray levels that the luminance of the backlight is set to an increased value, and in the opposite case when the low gray levels are greater than the high gray levels the luminance of the backlight is set to a value, less than the value of the first case. P[0045] further states how the gray levels are counted by counting the amount of data over a first predetermined gray level and the amount of data below a second predetermined gray level. Thus there is a means for selecting a dimmed brightness level of the backlight by counting a number of occurrences of data over a first predetermined gray level and the amount of data below a second predetermined gray level*), and means for adapting the input signal in dependence on the dimmed brightness level (*See; Fig. 3, steps x20 and p[0036] for data conversion*). Park does not implicitly teach what the high and low counts of gray levels are in relation too.

However, Leyvi teaches a brightness adjustment method which includes a threshold circuit which counts pixels greater (white pixel) and lower (black pixel) than a pre-determined gray level and based on the count a brightness adjustment circuit

decides to adjust the global brightness of the frame (*See; Fig. 4 and p[0024]-p[0035]*).

Further it is addressed by AAPA that this method of setting a threshold is well known, that one may set various temporary thresholds, perform the resulting counts, and then set a permanent threshold (*See; Pg 8, first and second paragraph of Remarks dated 02/02/2011*).

Therefore it would have been obvious to one of ordinary skill in the art to use the well known method of setting a threshold by using Leyvi's count analysis to adjust the backlight in the system of Park, to give a more accurate brightness level based on a given image, to increase user satisfaction.

In regards to claim 10, Park teaches the predetermined brightness level being formed by the maximum contrast ratio of the display panel and the dimmed brightness level (*See; Fig. 2 and Fig. 3*).

In regards to claim 11, Park inherently teaches the input signal comprising color components of the image (*See; Fig. 1, RGB input*), a component error function being determined for each of the color components, the error function being formed by adding the component error functions (*Inherently taught in the situation of the weighting factor equaling zero, thus the weighted numbers would also equal zero and would further result in the error function equaling zero*).

In regards to claim 14, Park inherently teaches wherein the means for selecting a

dimmed brightness level are further adapted to select the dimmed brightness level in dependence on a content of a part of the image (*When confronted with the problem of not distorting the image processing due to external effects, it would have been inherent to process only the useful portion of the image to save processing time*).

In regards to claim 16, Park teaches signal processing circuitry for providing the input signal (*See; Fig. 1, element 900*).

7. Claims 4 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (2002/0130830) in view of Leyvi et al (2006/0071936) (herein “Leyvi”) in view of Applicant's Admitted Prior Art (AAPA) (See; Page 8 of Remarks filed 02/02/2011) and further in view of Kim et al (2003/0151565) (herein “Kim”).

In regards to claim 4, Kim teaches the error function being formed by an addition of the one or more weighted numbers of occurrences (*See; Fig.2, See; p[0038]-p[0039] where the lower and upper gray level counts are redetermined using a first and second weight set. Also see p[0129]-p[0131] and Table 3 where each expression is multiplied by gray level 220*).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Kim with Park to reduce errors in reaching the desired brightness level in the adjustable light source.

In regards to claims 19 and 20, Kim teaches substantially minimizes an error

function including one or more weighted numbers of occurrences formed by multiplying each of the one or more numbers of occurrences by a weighting factor (*See; p[0038]-p[0039] where the lower and upper gray level counts are redetermined using a first and second weight set. Also see p[0129]-p[0131] and Table 3 where each expression is multiplied by gray level 220*).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Kim with Park to reduce errors in reaching the desired brightness level in the adjustable light source.

8. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (2002/0130830) in view of Leyvi et al (2006/0071936) (herein "Leyvi") in view of Applicant's Admitted Prior Art (AAPA) (See; Page 8 of Remarks filed 02/02/2011) and further in view of Usul et al (EP 0513551) (herein "Usul").

In regards to claim 12, Usul teaches the processing circuitry further comprising means for determining a smoothed dimmed brightness level for an image in dependence on the dimmed brightness level of the image and a previous smoothed dimmed brightness level of a previous image, wherein n is a sequence number of successive images (*See; Abstract where the new brightness level is adjusted in accordance with the previous level*).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Park and Usul's brightness adjustment using previous levels because using the information of previous images is a known technique used for a

plurality of reasons, including motion estimation, response time improvement and error calculation.

In regards to claim 13, Usul inherently teaches the smoothing having a faster response time to an increasing dimmed brightness level of subsequent images than to a decreasing dimmed brightness level of subsequent images (*When confronted with the problem of increasing the response time for implementing a new dimmed brightness level, it would have been obvious to reduce the counterbalancing effect of previous dimmed brightness levels to increase response time*).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Park and Usul's brightness adjustment using previous levels because using the information of previous images is a known technique used for a plurality of reasons, including motion estimation, response time improvement and error calculation.

***Allowable Subject Matter***

9. Claims 5-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 5 differs from the disclosure of Park, Leyvi and Kim in that, no error optimization with regards to the upper and/or lower gray levels are performed. When confronted with the problem of displaying the maximum number of gray levels of the

input image, Park teaches increasing the number of possible brightness levels as referred to in Fig. 3. Thus it would not have been obvious to one of ordinary skill in the art to calculate the dimmed brightness level according to a function minimizing the number of gray levels that will not be displayed.

Claims 6-9 depend directly or indirectly from claim 5 and thus are allowable for all the same reasons.

## ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN BOYD whose telephone number is (571)270-7503. The examiner can normally be reached on Mon - Fri 6:00 - 4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on 571-272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. B./
Examiner, Art Unit 2629

/Kevin M Nguyen/
Acting SPE of Art Unit 2629